15621 SE 26th Street
Bellevue, WA 98008
October 8, 2001

Dear Friends:

I am pleased to present Doug Palmer's *Field Guide To The Mecographs* in it's entirety. Doug has been working on this for years, and has done an incredible job in documenting these keys. Many thanks to all of you that have provided input, photos and advertisement copies for this project. Enjoy!

History of the Signal Electric Company, Menominee, MI. Courtesy of the Menominee County Historical Museum Archives

1892	Menominee Electric and Mechanical company is founded. Products included crank telephone generators, telephones and switch boards.
1904	The original plant burns. Operations are temporarily moved to Marinette, Wisconsin.
	The new plant opens at the present site. The product line is expanded to include telegraph instruments and wireless radio devices.
1919	Menominee Electric Co. is reorganized and renamed Signal Electric Manufacturing Co. The product line is Bells, wireless radio instruments, medical batteries, telegraph instruments, small electric motors, fans, portable electric hand tools. Note: Space in the building was shared with another company until 1921.
1937/1938	North wing is built and expanded. South wing is built - it was then called the Central Wing.
1952	King Seeley Thermos Co. purchased Signal Electric Manufacturing Co. Products were fans, heaters, portable electric hand tools and small electric motors
1954	The central wing and receiving are built.
June 1, 1964	King-Seeley Thermos Co. announces it will close the Signal Electric Division in Menominee, Michigan.
October 30, 1964	Vernco Corporation of Tennessee agrees to purchase Signal Electric division from King-Seeley Thermos Co.
December 1977	Emerson Electric Co. purchases Vernco Corporation of Tennessee.

Spark Key Project. There are already 2 companies that made spark keys that I didn't have info early enough on to make the AWA Review article. The 2 new names are Max Kohl, of Chemnitz, Germany, and Carpentier, Graiff, and Radiguet from France. Both companies made amazing keys. In addition, there is new information on the website about Liberty Electric Corp., Independent Wireless, Signal Electric, and some of the other companies as well. ***Russ Kleinman***

Flash Key Project. You may wish to add to your data base a Martin Amateur Flash Key with the serial number 5001, which suggests that the numbering may have started at 5000. So, until someone comes up with an serial number lower than 5001, the bug in my collection may be the earliest existing Martin Amateur Flash Key "off the line". ***Stan Riome***

Morsecode Bits and Pieces.

Levinson Radio Bugs. I was talking to Colin, VK2DYM, about Levinson Radio bugs and Buzza bugs. When I told him that I though Levinson took Buzza bugs and labeled them, this is what he said. (Colin seems to be the foremost expert on AWA [Amalgamated Wireless of Australasia] and has been most helpful with their history and equipment.) ***Neal McEwen.***

> "Levinsons was an Electrical retailer from early 1920's. No relation to Buzza. They made keys and practice sets (actually they had them made under their name). One version had a key mounted on a Bakelite base with a valve amplifier inbuilt. They made straight keys, cheap and fancy practice sets and a bug."

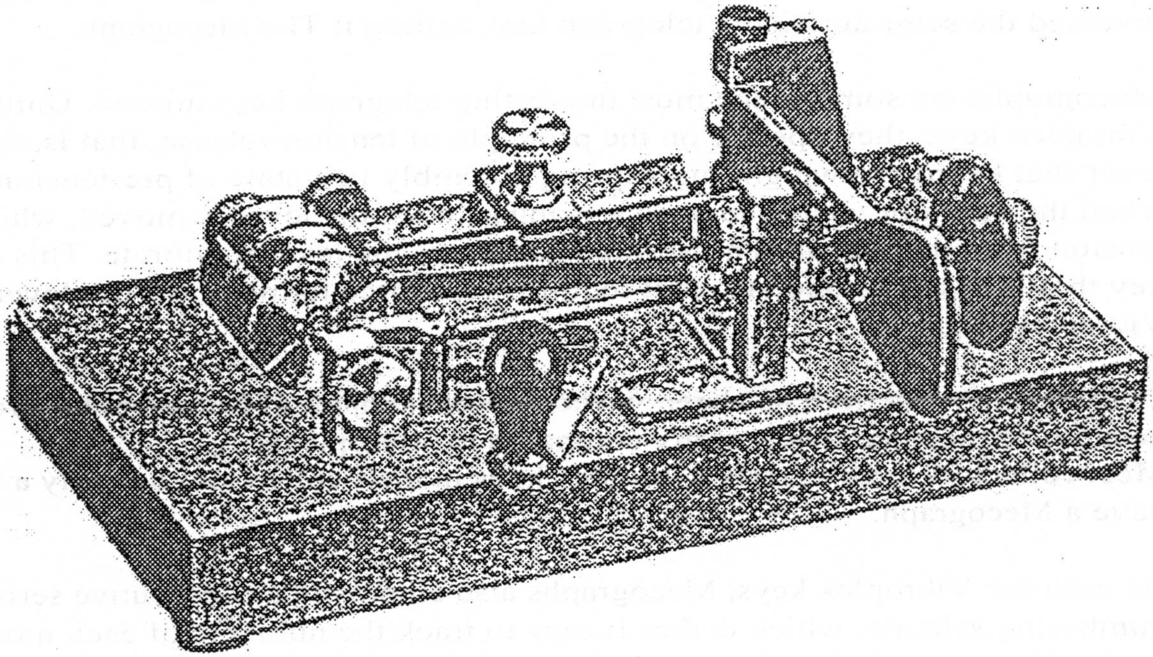
McElroy Keys. Re Stan Riome's piece on Mac stream keys and copies - on page 399 in the 3rd paragraph he notes that most of the hardware on the copies is the same but different from those pieces used on the real Mac keys. While this is somewhat contra to that observation I thought it worth noting that in a discussion I had with Gordon Breedlove of Codetrol fame he told me that Ted McElroy sold him a great quantity of new stock hardware and parts and, in fact, he used much of those in his Codetrols. So, if any of you lucky Codetrol owners examine your pieces I'd be interested to see what you come up with. I wonder who else Ted sold parts to? ***Pete Malvasi.***

Spanish Speaking J-38? I found what is, for me, a new item in the J-38 key inventory. I got this key from Jack Klobuchar, W1TEC, who wrote: "I think I got the key with Spanish writing on it during a trip to Buenos Aires, Argentina in the late 1980s . . . There was an antique section in the city and I found several keys there, but I only purchased this one." The base is brown Bakelite, 1/4" shorter than the standard base, has the word "TELEF." on the left side in place of the usual "TEL", and "LINEA" on the right side in place of the standard "LINE". There is nothing stamped on the front of the base where the Signal Corps key always has "J-38". The key itself is made like a standard brass frame type, but the frame seems to have been nickel plated. There are no positioning pins in the terminals, and there are no holes for them in either the terminals or the base. This is the only example of a Spanish J-38 that I have ever seen. ***Scott Hill.***

A FIELD GUIDE

TO THE

MECOGRAPHS



BY

DOUG PALMER
K4KEY

A FIELD GUIDE TO THE MECOGRAPHS

INTRODUCTION:

Alot has been written on the subject of Vibroplex bugs.
From Bill Holly's book that explores the history of the company to John Elwood's serial number study and Tom French's collectors guide, collectors have a wealth of information available helping them to identify the various models and variations.

However, collectors often forget that it was William Coffe, not Horace Martin, that invented the semi-automatic telegraph key, calling it The Mecograph.

Mecographs are some of the most interesting telegraph keys around. Unlike the Vibroplex keys, they operate on the principle of tension-release; that is, they employ a lever that keeps the weight/mainspring assembly in a state of pre-tension, so that when the operator wishes to send a string of dots, the lever is moved, which releases tension from the weight/mainspring and causes the lever to vibrate. This makes for a key that is easier to operate, as it requires less force to move the dot lever than on a Vibroplex bug.

Despite this, very little has been written on the subject of Mecographs, presumably because of their relative scarcity compared to Vibroplexes.
Most collectors have several Vibroplex keys in their collection, but only a lucky few have a Mecograph.

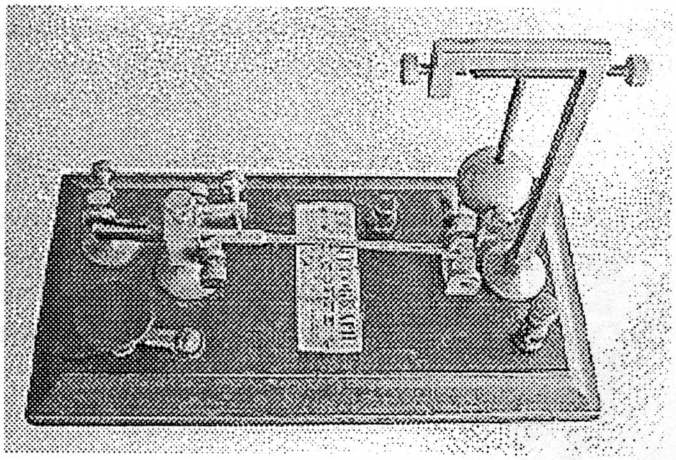
As with the Vibroplex keys, Mecographs also employed a consecutive serial numbering scheme, which makes it easy to track the numbers of each model that were made. The problem is finding enough of them to make any sense of this numbering system.

I have spent the last few years collecting the serial numbers of Mecograph keys, provided by other collectors and from keys that have appeared on EBAY(tm), in addition to gathering patent information on the different models.

This field guide is intended to help the collector identify the different Mecograph models. In addition, a table of serial numbers will be presented. With this information, together with patent information, we should be able to determine when and approximately how many of each model was made.
It is NOT intended to explore the history of the company or their legal battles with Vibroplex. Much of this has already been covered in Bill Holly's book.

THE MODELS:

A. First Model:



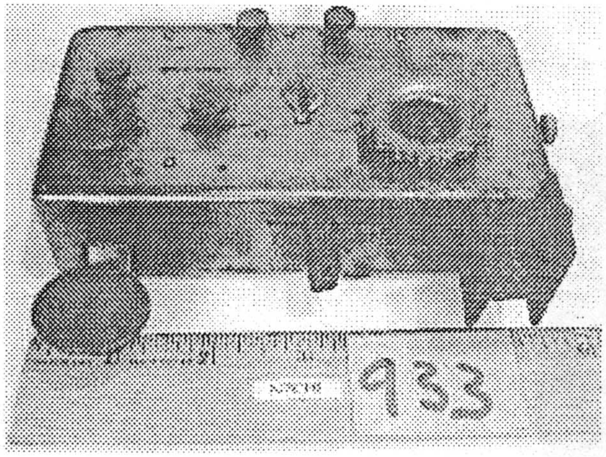
(Russ Kleinman, WA5Y collection)

The first Mecograph model was a large wooden-based key, characterized by a vertical pendulum with a spherical weight at the lower end that would move back and forth when the lever was moved to the right, hence producing a string of dots. It was the first true mechanical semi-automatic key, patented by William O. Coffe, and also known as The Coffe Vertical.

This key is quite rare, known only from a couple examples.

These keys had no serial numbers.

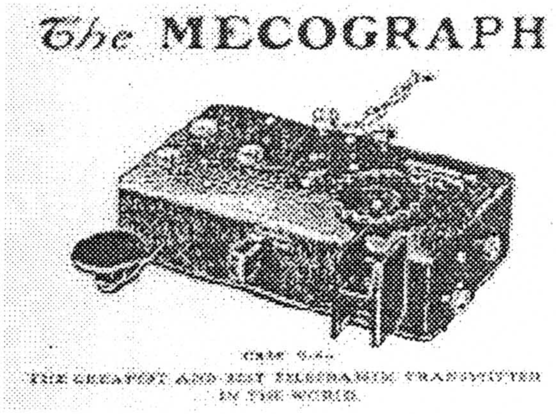
B. Second Model (The Combo Model):



The second Mecograph will be referred to as the Combo Model, as it consisted of a straight key and bug enclosed in a single metal box. The mechanism was quite complex, but the bug still used the tension-release principle. This was the first model to start using serial numbers.

(The serial numbers of the known examples suggest that well over 1000 were made, but they don't show up very often).

All Mecograph Models after the Coffe Vertical were patented by Benjamin Bellows.

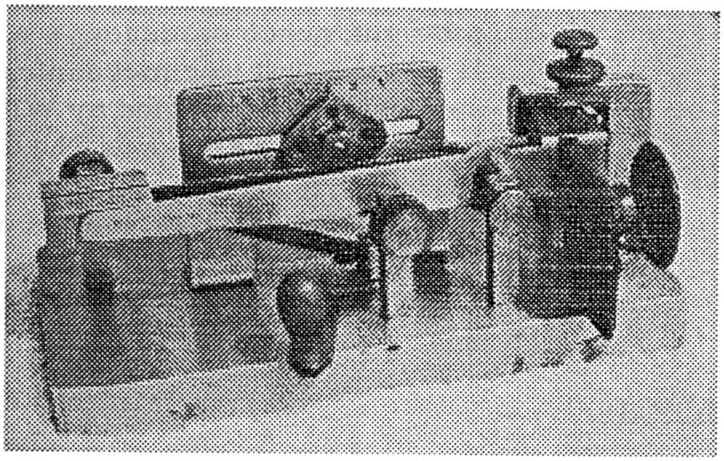

The MECOGRAPH
THE GREATEST AND BEST TELEGRAPHIC TRANSMITTER
IN THE WORLD.

(Lynn Burlingame, N7CFO collection)

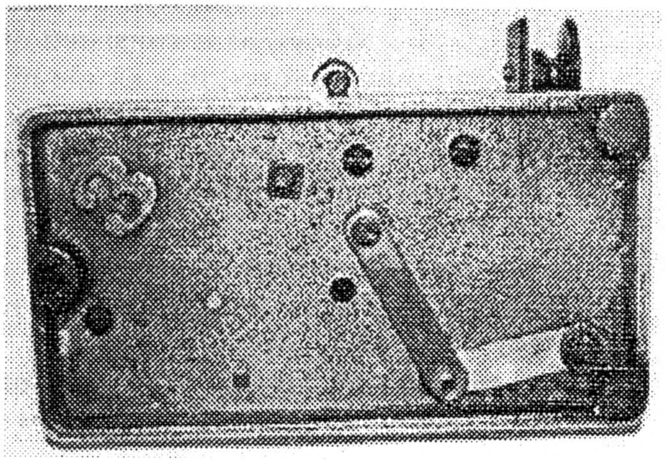
C. The Model 3 (Square-weight Version):

This is one of the better-known models.
The first Model 3 was a right-angle bug, with two rectangular weights permanently attached to the end of a flat mainspring. Speed was controlled by sliding a spade-shaped metal clip along the mainspring, as the weights could not be moved.

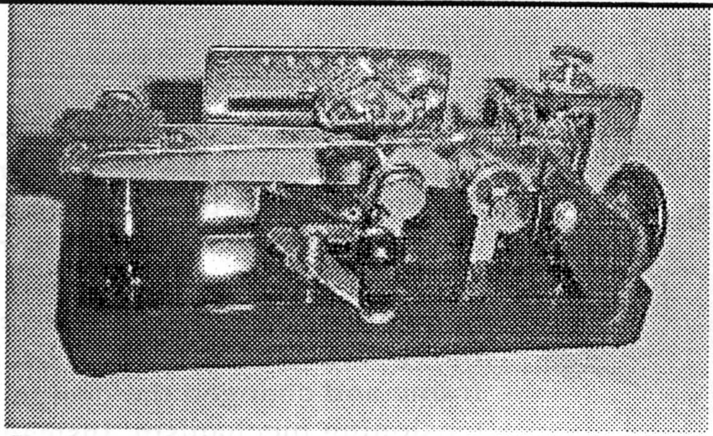
There were 3 different versions of this key:



The first version was all-brass, including the base. The corners of the base were rounded, and there was a large number "3" cast into the underside of the base.



(Russ Kleinman, WA5Y collection; Photos by Tom Perera, W1TP)

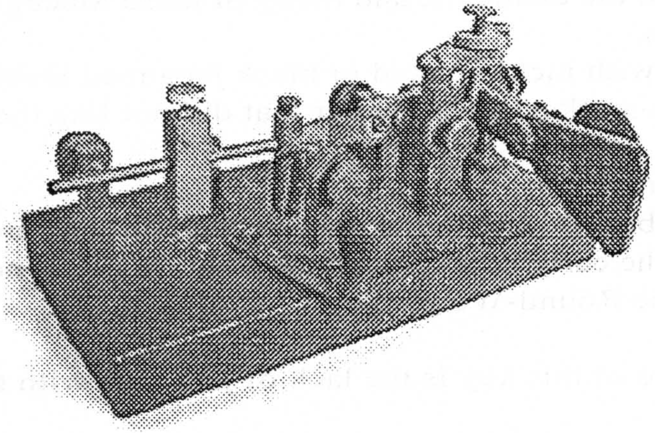


(Doug Palmer, K4KEY collection)

The second version had a steel base, with sharp corners. The upper parts were nickle-plated brass. The base finish was black japanned.

The third version also had a steel base; however, the upper parts (or most of them) were nickle-plated STEEL. (The adjustment screws and contact supports were nickle-plated brass).

D. Cost-Reduced Model 3:



(Neal McEwen, K5RW collection)

At first glance, this bug resembled the square-weight Model 3, with some important differences:

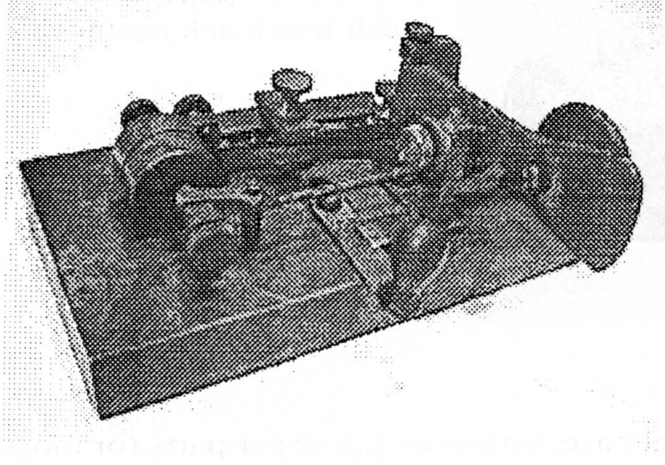
1. It had a round pendulum and MOVABLE square weights.
2. The frame, instead of being a single cast unit, was assembled from two uprights and a horizontal piece across the top.
3. The keying lever pivoted on 4 small ball-bearings.
4. Most importantly, the bug operated like a normal Vibroplex; i.e. it did NOT operate on the tension-release principle.

What is REALLY strange about this key is that the patent for this key clearly shows that it is supposed to operate with tension-release, using a similar type of tensioning bar as is found of the square-weight Model 3. More on this later.

The cost-reduced Model 3 had a steel base and unplated brass upper parts.

This is probably the second-rarest model.

E. Round-Weight Model 3:



(Photo by Tom Perera, W1TP)

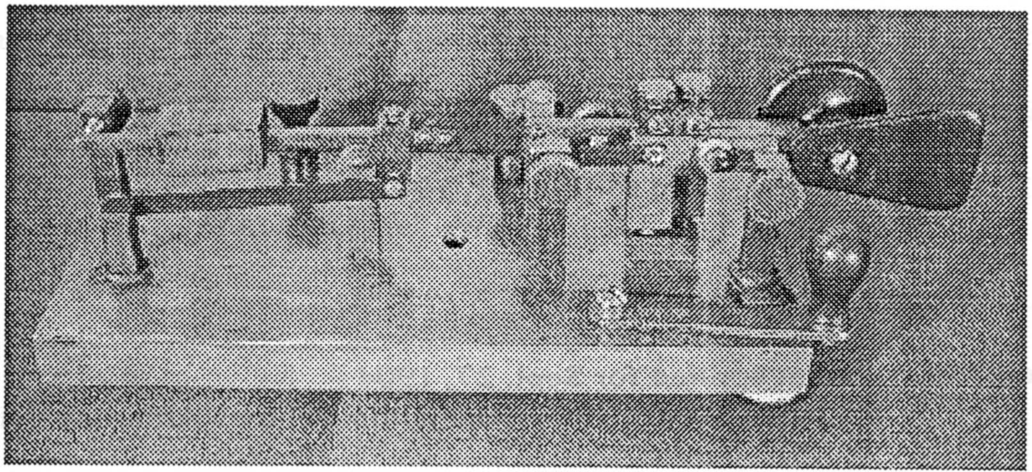
This key stayed with the right-angle design, changing the weights from rectangular to round. These weights were fixed to the end of the mainspring like with the square-weight Model 3, with a sliding clip that could be moved to vary the speed. Also, they went back to the cast frame and changed the design of the tensioning mechanism. Instead of using a long tensioning bar that ran the length of the key, this model employed a "clock cam" that pivoted on a small post on the base, in order to accomplish the same thing.

The round-weight Model 3 had a steel base with a "tiger stripe" finish. This finish is produced by copper plating the base then black anodizing the plated surface. Then, a small buffing wheel is used to selectively remove the black finish, producing the narrow copper "stripes". (similar to the finish on the Barclay Box Relay)
This finish did not hold up well in the elements, and many of these Mecographs are found in a highly rusted condition.
Sometimes these keys are found with nickle-plated or black japanned finish; however, I believe that this was done after-market, by an owner that did not like the look of his rusted key.
The upper parts were unplated brass.
Some keys have also have a number "3" and the word "Mecograph" cast into the underside of the base, similar to the early Brass Square-Weight Model 3; however, the number "3" is much smaller on the Round-Weight key.

Another interesting design feature of this key is the lack of jam nuts with the adjustment screws.
Instead of jam nuts, the vertical posts are drilled all the way from the bottom to the point where the horizontal screw hole is located. Inside this hole is a small spring and bias rod, which allows the bottom mounting screw to provide pressure on the spring which in turn puts pressure on the horizontal screw.
This prevents the screw from coming loose, but is not so tight that the user cannot adjust the screw.

The Round-Weight Model 3 is by far the most common Mecograph model.

F. Mecograph Premier Model:



(Doug Palmer, K4KEY collection)

The Premier model is also known to collectors as the In-line Mecograph, as it abandoned the right-angle design and employed a Vibroplex-like design. The tension-release operation was also abandoned on this design, as the key operates exactly like a Vibroplex.

Despite the similarity in appearance to the Vibroplex Original, the Mecograph Premier does have some design differences that set it apart from a Vibroplex..

For example, the dot-contact spring is a long spring steel strip mounted on a post on the base instead of the u-shaped spring attached to the pendulum.

Also, the lever uses an ingenious method of spring tensioning for the dash/dot levers. Instead of using two separate coil springs, it uses a single spring-steel strip to provide the return for both the dash and dot levers.

In addition, the Mecograph Premier has a single rectangular weight with no thumbscrew. Instead, there is a piece of spring-steel inside the weight that holds it firmly against the pendulum.

As with the Round Weight Model 3, the Premier Model also lacks jam nuts on the adjustment screws, and uses the spring and bias rod inside the post to provide tension for the screw.

The Premier Model is an all-brass key, including the base and upper parts. Despite the perception by many collectors, this is NOT one of the rarer models.

THE PATENTS:

To the best of my knowledge, there have been 4 patents related to Mecograph keys:

1. The First Model Mecograph (Coffe Vertical):

   #812183. Patent applied for Jan. 11, 1904
   Patented Feb. 13, 1906 (William O. Coffe)

2. The Combo Model:

   #866755. Patent applied for Sept. 27, 1904
   Patented May 5, 1908 (Benjamin Bellows/Ambrose Behner)

3. The Cost-Reduced Model 3:

   #855085. Patent applied for July 9, 1906
   Patented May 28, 1907 (Benjamin Bellows)

4. The Round-Weight Model 3:

   #939383. Patent applied for July 29, 1907
   Patented Nov. 9, 1909 (Benjamin Bellows)

It's interesting to note that no specific patents were filed for the original design of the Model 3, the one with rectangular weights and tension-release operation.
Also, there is no patent for the Mecograph Premier Model.

DATING YOUR MECOGRAPH:

Several clues as to the production dates of the Mecograph models can be obtained from:

1. Patent Dates (both application dates and dates that patents were granted). These patent dates were often stamped on the key itself.
2. Advertisements in trade journals, such as The Railroad Telegrapher, or The Commercial Telegrapher's Journal.
   Generally, we can assume that a new model was available about the time the first advertisement appeared in the trade journals.

With this in mind, let's look at each model in terms of patent dates and advertisements.

First Model:

The patent for the First Model Mecograph was applied for in Jan. 1904.
Although the patent was not granted until Feb. 1906, the first ad for the Second (Combo) Model had already appeared in the Jan. 1905 issue of The Commercial Telegrapher's Journal; hence, we can assume that the First Model Mecograph was only made during 1904. I have not been able to locate any advertisements for the First Model Mecograph

Combo Model:

The patent for the Combo Model was submitted in the second half of 1904, but was not granted until 1908. However, we know from the advertisements that the Combo Model probably appeared on the market about Jan. 1905.
Also, the first advertisement for the brass Model 3 appeared in the Commercial Telegrapher's Journal in Nov. 1905.
So, we can infer that the Combo Model was produced from about Jan. 1905 to about Nov. 1905.

Model 3 (Square-Weight Versions):

There is no specific patent for the Square-Weight Model 3 Mecograph. So, clues on dating have to be obtained from the dated advertisements.
We have already showed that the first ad for the all-brass Model 3 appeared in Nov. 1905.
The first ad for the Round-Weight Model 3 appeared in early 1908.
So, it would appear that this model (and its different versions) was produced for about 2 1/2 years, from late 1905 to early 1908.

Cost-Reduced Model 3:

This model presents somewhat of a problem for dating.
The first advertisement appeared in the Commercial Telegrapher's Journal in June, 1906, just before the patent was applied for in July of the same year.
However, from the serial numbers of known keys, we know that this model was only made for a short time, just before the start of production of the Round-Weight Model 3 in early 1908.
So, it would seem that the actual dates of production of this model were roughly late 1907 to early 1908.

I pointed out earlier that the patent drawings and first advertisement for this mod clearly showed a long, numbered tensioning bar that ran the length of the pendulum. This tensioning bar does not exist on the actual key as it was produced, so it's possible that the redesign of this key to remove the tensioning bar is what caused the delay in releasing this model to the market.

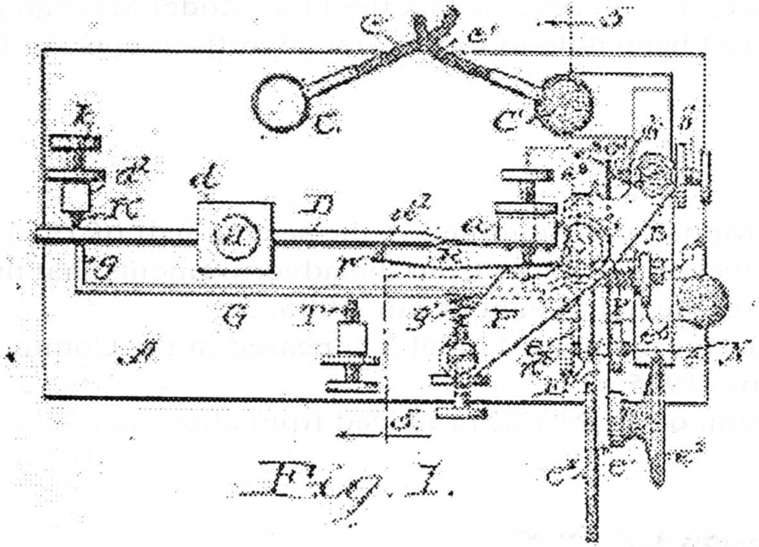


Fig. 1.

This is the original patent drawing for the cost-reduced Model 3. Note the long tensioning bar with the numbered scale at front of the key. This tensioning bar was supposed to allow the key to operate like the early right-angle Mecographs; i.e. using Tension release.

However, no keys have been found with this tensioning bar, and close examination of existing keys do not indicate that such a tensioning bar ever existed on these keys.

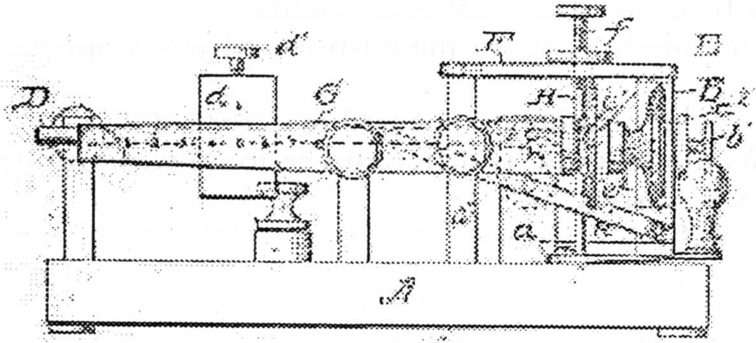


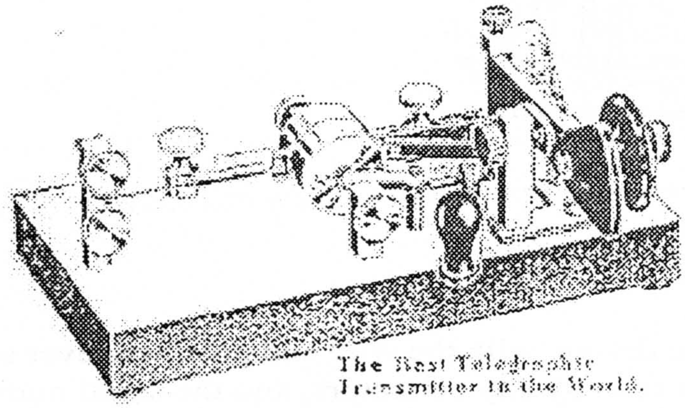
Fig. 2.

It's also very strange why Mecograph would remove this tensioning bar from their key, since with the bar removed, the key operates just like a normal Vibroplex (although a right-angled one). Considering all the patent and lawsuit issues that Mecograph had to endure from the beginning, it seems like they were just asking for trouble by releasing this model to the market. That's probably why so few were ever produced.

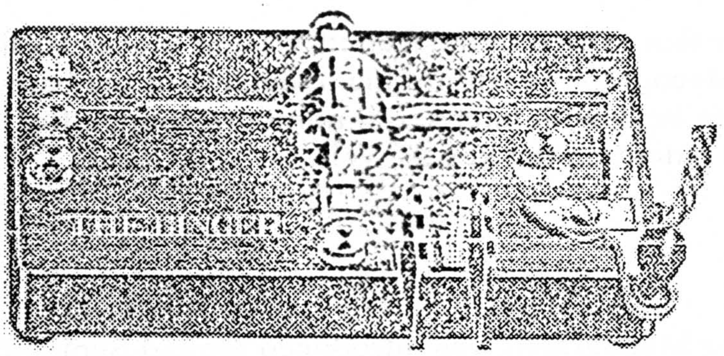
Round-Weight Model 3:

By far the most common Mecograph Model, the Round-Weight Mecograph was introduced in early 1908, and was made up until around mid-1911, when the Premier Model was introduced.

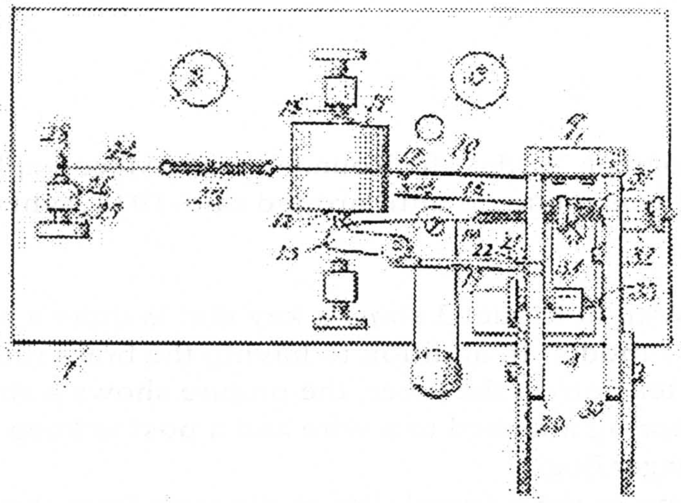
The early ads for the Round-Weight Model 3 show a key that is quite a bit different from the typical design for this model. In addition to having the brass rod and "clock cam" assembly for providing tension on the lever, the picture shows a strange configuration consisting of a spring attached to a wire and a post to keep tension, similar to the design of the Dinger Bug.
Actually, this is nearly the same as the original design drawing from the patent for the Round-Weight Model 3.



This is an advertisement from a 1908 copy of The Railroad Telegrapher. Note the wire tensioning device, similar to the Dinger. The rest of the key is similar to the typical round-weight Model 3. It is interesting that ads for the Dinger appeared in the same issue, and both keys were made in Cleveland.

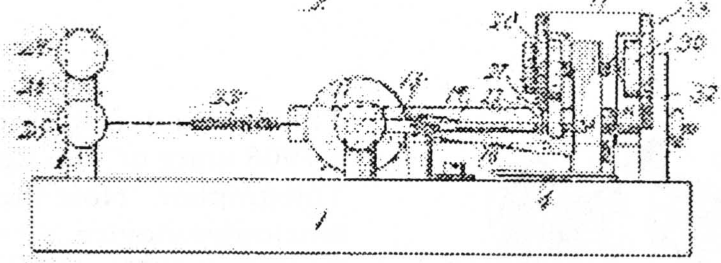


This is an advertisement for The Dinger, from the May 1908 issue of The Railroad Telegrapher. Note the similarity of the tensioning mechanism to the Mecograph advertisement above.



Here is the original patent drawing for the round-weight Model 3, showing the spring/wire tensioning mechanism.
This Patent drawing differs from both the early advertisement pictures as well as the actual production key in that this drawing shows a double-lever design.

Fig. 3.



I don't believe that this specific design, with the wire and post, was ever sold on the open market. It has never been seen by any collectors, and the serial number data also suggests the same. It only exists in the patent drawing and in the early advertisements. In fact, by 1910, the Mecograph advertisements were showing the version of Mecograph that we all know, WITHOUT the wire/post arrangement. (The picture on the cover of this field guide is from a 1910 Mecograph ad.)

Also, it was mentioned earlier that SOME of the Round-Weight Model 3's have a number "3" and the word "Mecograph" cast into the underside of the base. This feature only seems to exist on keys with later serial numbers, made after 1909. Most of these have the 1909 patent on the key as well.

Premier Model:

The Premier Model, or In-line Mecograph, was introduced around September, 1911. This was the last Mecograph model produced, and it was most likely produced until the company was bought out by Vibroplex in 1913. As far as I know, no specific patent exists for the Premier Model.

SERIAL NUMBER TABLE:

Serial #	Model	Latest Patent Date	Year Made	"3" ?
	Coffe Vertical	Patents Pending	1904	
	Coffe Vertical	Patents Pending		
265	Combo Model	Patents Pending	1905	
1057	Combo Model			
1136	Combo Model			
2032	Brass Base Model 3	Patents Pending		YES
2304	Brass Base Model 3	Patents Pending		YES
2322	Brass Base Model 3			
2365	Brass Base Model 3	Patents Pending		YES
2433	Brass Base Model 3	Patents Pending		YES
2538	Brass Base Model 3	Feb. 13, 1906	1906	YES
2546	Brass Base Model 3			
2656	Brass on Steel Model 3	Feb. 13, 1906		
2841	Brass on Steel Model 3			
2880	Brass Base Model 3	Patents Pending		YES
2889	Brass on Steel Model 3			
3079	Brass on Steel Model 3	Feb. 13, 1906		NO
3203	Brass on Steel Model 3			
3387	All Steel Model 3			
3469	All Steel Model 3	Feb. 13, 1906		
3489	Brass on Steel Model 3	Patents Pending		NO
3544	Cost-Reduced Model 3			
3613	Cost-Reduced Model 3			
3653	All Steel Model 3			
3711	Cost-Reduced Model 3			
3871	All Steel Model 3	Feb. 13, 1906		
3883	Cost-Reduced Model 3	No Patent Dates		NO
4082	Round Weight Model 3	No Patent Dates		NO
4472	Round Weight Model 3	May. 5, 1908	1908	NO
4617	Round Weight Model 3			
4723	Round Weight Model 3			
4813	Round Weight Model 3			
4943	Round Weight Model 3			
4971	Round Weight Model 3	May. 5, 1908		
5069	Round Weight Model 3			
5133	Round Weight Model 3	May. 5, 1908		NO
5514	Round Weight Model 3	May. 5, 1908	1909	NO
5593	Round Weight Model 3			
5911	Round Weight Model 3			
6162	Round Weight Model 3	May. 5, 1908		
6164	Round Weight Model 3	May. 5, 1908		
6167	Round Weight Model 3	May. 5, 1908		NO
6324	Round Weight Model 3			
6475	Round Weight Model 3			
6523	Round Weight Model 3	Nov. 9, 1909		YES
6623	Round Weight Model 3			

6766	Round Weight Model 3		
6814	Round Weight Model 3	No Patent Dates	YES
6816	Round Weight Model 3	Nov. 9, 1909	YES
6830	Round Weight Model 3		
7272	Round Weight Model 3	Nov. 9, 1909	YES
7301	Round Weight Model 3	None	YES
7374	Round Weight Model 3		
7614	Round Weight Model 3	Nov. 9, 1909	YES
8060	Round Weight Model 3	May. 5, 1908	YES
8356	Round Weight Model 3		
8765	Round Weight Model 3	Nov. 9, 1909	YES
9055	Round Weight Model 3		
9264	Round Weight Model 3	No Patent Dates	YES
9354	Round Weight Model 3		
9440	Round Weight Model 3		
9505	Round Weight Model 3		
10008	Premier (In-Line) Model	Nov. 9, 1909/patents pending	
10144	Premier (In-Line) Model		
10426	Premier (In-Line) Model		
10449	Premier (In-Line) Model		
10523	Premier (In-Line) Model		
10552	Premier (In-Line) Model		
10607	Premier (In-Line) Model		
10636	Premier (In-Line) Model		
10684	Premier (In-Line) Model		
10803	Premier (In-Line) Model		
10829	Premier (In-Line) Model		
11445	Premier (In-Line) Model		
12169	Premier (In-Line) Model		

Notes on Patent Dates:

Brass-Base Model 3's have "Patents Pending" stamped on release lever

Early Round-Weight models have patent info next to circuit closer and/or on side of frame

Later Round-Weight models have patent info on paddle lever

Column labeled "3"? Refers to the presence of a cast number "3" on the underside of the base.

HOW MANY WERE MADE?:

From the table above, we can approximate the numbers of each model that were made, along with the dates:

Model	Approx. Number Made	When Made
Coffe Vertical	Unknown	1904
Combo Model	1200-2000 *	1905
Square Weight Model 3	2000-2800 *	Late 1905-Early 1908
Cost Reduced Model 3	200-300	Late 1907-Early 1908
Round Weight Model 3	6000	1908-1911
Premier Model	2500	1911-1913

- It is difficult to estimate how many of these keys were made , because of the large gap in the known serial numbers between numbers 1136 and 2032. More data is needed to know how many of these missing numbers are Combo Models and how many are Model 3's.
  I would suspect that the number of Combo keys is closer to 1200 than to to 2000, because this model was only made for about 1 year, whereas the Square-weight model 3 was made for over 2 years.

We can further break down the Square-Weight Model 3's into the 3 known versions: All-Brass, Brass parts on Steel Base, and All-Steel.
This is more difficult to accurately assess these numbers because of the overlap in serial numbers between versions. In other words, they still made a few All-Brass keys after the Brass-on-Steel keys were introduced, etc.

All-Brass Model 3:	850-1350
Brass-on-Steel Model 3:	750-1000
All-Steel Model 3:	200-400

Again, these are very rough numbers. More serial number data is needed to narrow down these figures.

CONCLUSION:

This concludes my report on the Mecograph keys. Hopefully, it has provided some useful information to collectors and cleared up some confusion concerning the different models and when/how many were made.

Thanks to all the collectors who contributed pictures and information about their keys to the project. I couldn't have done this project without your help.

If anyone has any new information, such as serial numbers (especially between 1100 and 2000) or some patent info on the Square-weight Model 3 or Premier model, I would love to hear from you. Please contact me at dpalm@mediaone.net.

Doug, K4KEY